UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 500
DENVER, CO 80202-2466

Ref: 8EPR-EP

OCT 21 1998

Mr. Tim Fox, Division Administrator
Planning, Prevention and Assistance Division
Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901

Re: TMDL Approval
Clark Fork River

Dear Mr. Fox:

Thank you for your recent submittal dated September 21, 1998 requesting approval of the phosphorus and nitrogen total maximum daily loads (TMDLs) for the Clark Fork River. We have completed our review of this project and wish to approve it as TMDLs. In particular, we approve the TMDLs as indicated on the attached table in accordance with Section 303(d) of the Clean Water Act (33 U.S.C. 1251 et. seq.). The TMDL is documented in the report entitled "Clark Fork River, Voluntary Nutrient Reduction Program" (Tri-State Implementation Council; August 1998). We wish to acknowledge that these TMDLs within the Voluntary Nutrient Reduction Program (VNRP) are based primarily on a voluntary approach to solving water quality problems. We acknowledge that the implementation phase of this TMDL includes the continuation of field monitoring to gauge effectiveness of control measures and to assure water quality goals are met.

We would like to make special note regarding the efforts of all the individuals that contributed to the Voluntary Nutrient Reduction Plan. It is evident in the final product that much was accomplished in developing a solution to the Clark Fork nutrient issue...a solution we feel will result in improvements to the waterbody. A special note of appreciation goes to the Tri-State Implementation Council staff and the DEQ staff for the contributions made to the effort. Further, we acknowledge the significance of the VNRP Memorandum of Understanding signed by key actors and the commitment to water quality as given in this MOU.

Thank you for this submittal. If you have any questions concerning this approval, feel free to contact Bruce Zander of my staff at 303/312-6846.

Sincerely,

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

cc: Ruth Watkins, Tri-State Implementation Council

Enclosure

APPROVED TMDLS

Waterbody Name*	TMDL Pollutant	Water Quality Targets	TMDL (all values given as a 30 day averaging period and are based on the critical 30Q10 summer low flow condition)			
			Location	WLA (kg/day)	LA** (kg/day)	TMDL (kg/day)
Clark Fork River USGS HUC 17010204 segments: MT76G001-1, MT76G001-2, MT76G001-3, MT76G001-4 USGS HUC 17010201 segments: MT76M001-1, MT76M001-2, MT76M001-3)	nitrogen (total) phosphorus (total)	**algae**: 100 mg/m^2 (summer mean) chlorophyll *a* 150 mg/m^2 (peak) chlorophyll *a* (at all locations in TMDL segments) **phosphorus**: 20 ug/l total phosphorus upstream of the Reserve Street bridge at Missoula 39 ug/l total phosphorus downstream of the Reserve Street bridge at Missoula **nitrogen:** 300 ug/l total nitrogen at all locations in TMDL segments **nutrient ratio:** 15:1 N:P ratio above Reserve Street bridge at Missoula	Silver Bow Creek ab. Butte		75 (TN), 2.7 (TP)	
			Butte WWTP	44 (TN), 4.4 (TP)		
			Clark Fork above Deer Lodge		52 (TN), 0.84 (TP)	
			Deer Lodge WWTP	0 (TN), 0 (TP)		
			Clark Fork below Deer Lodge			52 (TN), 0.84 (TP)
			Blackfoot River		184 (TN), 7.9 (TP)	
			Clark Fork above Missoula		285 (TN), 19 (TP)	
			Missoula	404 (TN), 40 (TP)		
			Clark Fork below Missoula			689 (TN), 59 (TP)
			Bitterroot River		414 (TN), 28 (TP)	
			Clark Fork above Stone Container		771 (TN), 54 (TP)	
			Stone Container (seepage) (direct)	 30 (TN), 23 (TP) 0 (TN, 0 (TP)		
			Clark Fork Below Stone Container			801 (TN), 77 (TP)

* These waterbodies are currently on or have been on the State's Section 303(d) waterbody list. The TMDLs associated with these waters are considered Section 303(d)(1) TMDLs.

** Some of the Load Allocations include all upstream sources of the pollutant.
These TMDL, LA, and WLA values on this page are based on a 30 day average during summer months.

■ TMDL Checklist ■

EPA Region VIII

State/Tribe: Montana
Waterbody Name: Clark Fork River
Point Source-control TMDL: X Nonpoint Source-control TMDL: X (check one or both)
Date Received: September 24, 1998 Date Review completed: October 16, 1998

Review Criteria (All criteria must be met for approval.)	Approved (check if yes)	Comments
■ **TMDLs result in maintaining and attaining water quality standards**	X	The purpose for the Voluntary Nutrient Reduction Program (VNRP)/TMDL is to restore the recreational designated uses to the Clark Fork River by eliminating nuisance algae growth in the river.
■ **TMDLs have a quantified target or endpoint**	X	There are no State numeric standards for phosphorus and nitrogen as they relate to recreational impairment. The VNRP/TMDL process used the recreational use classification and narrative provisions of the State water quality standards as a basis to develop site-specific targets for total phosphorus, total nitrogen, and algal biomass. These targets were established by relying on various methods including reference reach approach, global regression of TN and chlorophyll *a*, cellular N/P analysis of Cladophora, nutrient uptake tests with Cladophora, and artificial stream tests. This overall methodology for determining appropriate TMDL targets is appropriate.
■ **TMDLs include a quantified pollutant reduction target, but this target can be expressed in any appropriate manner**	X	Phosphorus and nitrogen are not conservative pollutants within the watershed. Concentrations of these pollutants change in the river as they are utilized for algal growth. To best describe the reduction targets in terms of TMDLs, LAs, and WLAs while taking the unconservative nature of the pollutants into consideration, Figures 1 and 2 describe these values in key locations throughout the basin. The Load Allocations upstream each of the point source discharger reflect the acceptable loading upstream from the facility which includes the nutrient loads from the upstream segment. The TMDLs, LAs, and WLAs are given as 30 day averages and a based on a 30 day, 10 year low flow critical condition.
■ **TMDLs must consider all significant sources of the stressor of concern**	X	All the significant sources of nutrients were considered in this VNRP/TMDL effort. Estimates and measures of loads from tributaries, groundwater, nonpoint sources, and point sources were considered. Individual allocations were given to the sources that needed to be controlled to assure attainment of the ambient targets.
■ **TMDLs are supported by an appropriate level of technical analysis**	X	A basin model was used to predict ambient concentrations of nutrients in the Clark Fork River mainstem. The model was based on simple mass balance principles and utilized first-order nutrient utilization rates derived from monitored data in the Clark Fork. The model considered all significant sources. The level of analysis was appropriate to support the TMDL.
■ **TMDLs must contain a margin of safety and consider seasonality**	X	An appropriate margin of safety was included by 1) basing the TMDL on a critical 30Q10 low flow regime and 2) incorporating a safety factor in the ambient nitrogen and phosphorus targets. Seasonality was considered by analyzing seasonal flow patterns, seasonal algal growth patterns, and by developing a TMDL that applies to the critical season (late June - September).
■ **TMDLs allocate loads to sources**	X	Load allocations were made to the various sources within the watershed, with individual wasteload allocations given to the sources that need to be controlled to achieve the in-stream targets. Load allocation values were calculated for significant sources, including point sources, nonpoint sources (including groundwater sources), and tributaries.
■ **TMDLs involve some level of public review**	X	The public was adequately solicited by the public through a number of notices, public meetings, and coverage in the various press media.

Figure 1. Components of Phosphorus TMDL for the Clark Fork River

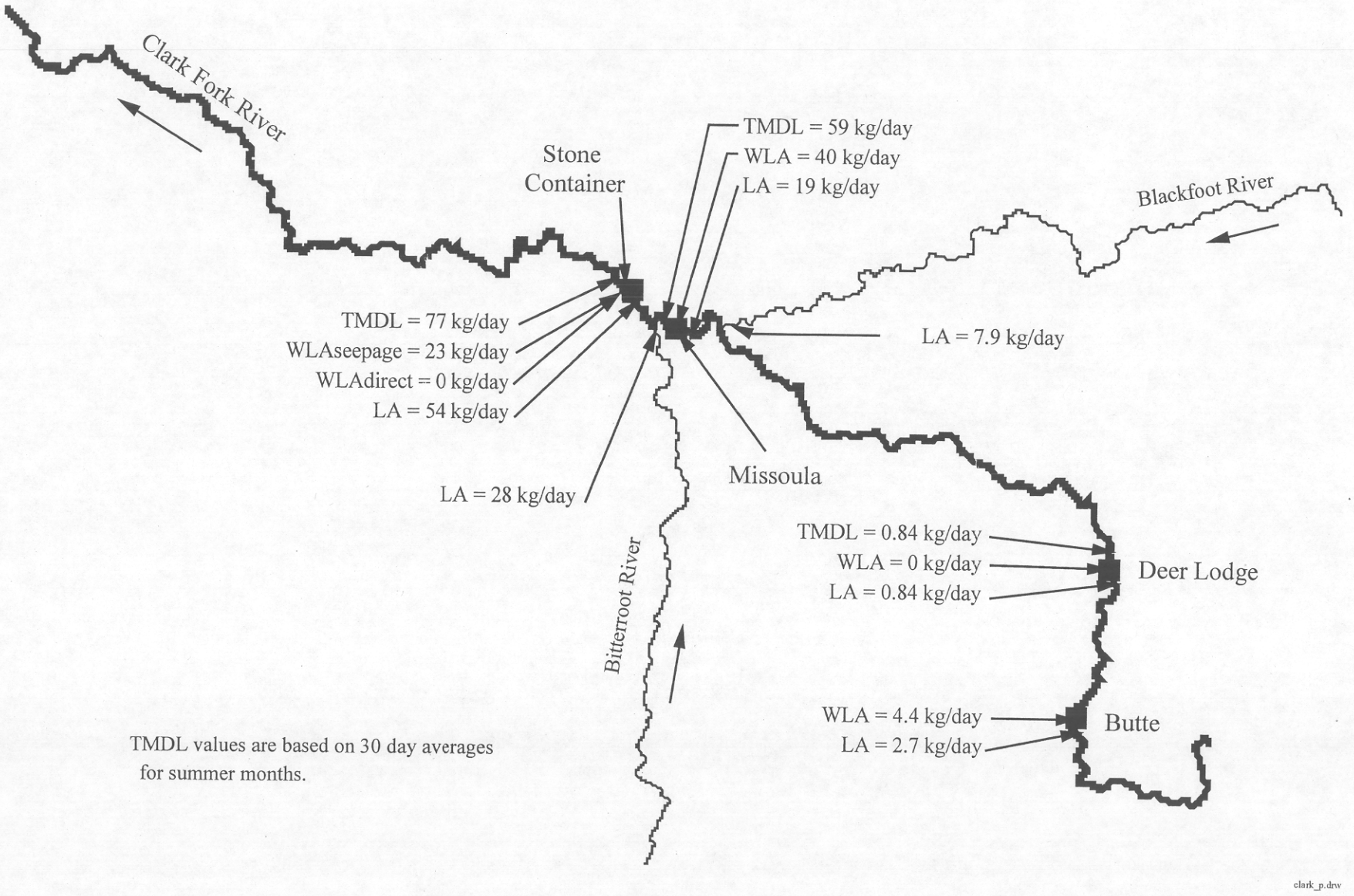

Figure 2. Components of Nitrogen TMDL for the Clark Fork River